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Spruon & Ferguson

COMMONWEALTH OF AUSTRALIA

THE PATENTS ACT 1952

577306

AUSTRALIA  
CONVENTION  
STANDARD  
PATENT  
APPLICATION  
FORM

CONVENTION APPLICATION FOR STANDARD  
PATENT OR A STANDARD PATENT OF ADDITION

3221.5.104



Full name(s) of  
Applicant(s)

I/We

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APPLICATION ACCEPTED AND AMENDMENTS  
ALLOWED

5.8.88

Address(es) of  
Applicant(s)

hereby apply for the grant of a standard patent  
for an invention entitled

"STORAGE CONTAINER FOR DISC-FORM RECORDING MEDIA"

Title of  
Invention

which is described in the accompanying complete specification.  
DETAILS OF BASIC APPLICATION(S)

Number(s) of Basic Application(s)

83108478.5, 83108481.9 and G 84 23 026.6

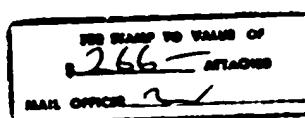
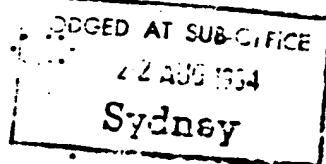
Name(s) of Convention Country(ies) in which Basic  
Application(s) was/were filed in European Patent Office,  
Federal Republic of Germany; European Patent Office,  
Federal Republic of Germany and Federal Republic of Germany  
(respectively)

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August 29, 1983  
August 29, 1983  
and August 2, 1984

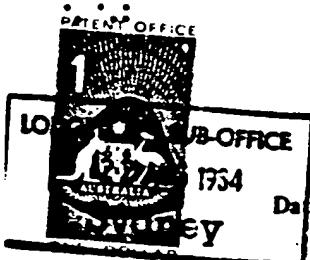
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Dated this TWENTY-FIRST day of AUGUST 1984

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of novelties ag

By:

M. J. Ferguson  
Registered Patent Attorney

To: The Commissioner of Patents

SFP2

12/83

SPRUSON & FERGUSON

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

DECLARATION IN SUPPORT OF A  
CONVENTION APPLICATION FOR A PATENT

In support of the Convention Application made for a  
patent for an invention entitled: "STORAGE CONTAINER FOR  
DISC-FORM RECORDING MEDIA"

I/We .Peter ACKERET and Dr. Peter HELBLING .....

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Allmendstr. 18 Alte Landstr. 55

of ...CH-8700.Küschnacht. and CH-8802.Kilchberg. both. in. Switzerland. respective

[full address of declarant(s) - not post office box]

do solemnly and sincerely declare as follows:

1. I-am/We are authorised by idn inventions and development  
of novelties ag the applicant for the patent to make this  
declaration on its behalf.

2. The basic applications as defined by Section 141 of the  
Act were made in European Patent Office, Federal Republic of  
Germany on the 29 August 1983, European Patent Office, Federal  
Republic of Germany on the 29 August 1983 and Federal Republic  
of Germany on the 2nd August 1984  
all by idn inventions and development of novelties ag.

3. PETER ACKERET of Allmendstr. 18, CH - 8700 Kusnacht,  
Switzerland is the actual inventor of the invention and the facts  
upon which the applicant is entitled to make the application are  
as follows:idn inventions and development of novelties ag is entitled by Contract of  
Employment between the inventor as employee and idn inventions and development of  
novelties ag as employer, as a person who would be entitled to have the patent assigned  
to it if a patent were granted upon an application made by the inventor.

4. The basic applications referred to in paragraph 2 of  
this Declaration were the first applications made in a Convention  
country in respect of the invention(s) the subject of the  
application.

DECLARED at Chur

this

12 day of Nov 19 84  
idn inventions and development  
of novelties ag

Signature of Declarant

(12) PATENT ABRIDGMENT (11) Document No. AU-B-32279/84  
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 577306

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DISK STORAGE

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SPRUSON & PERGUSON

(56) Prior Art Documents  
66474/86 G11B 33/04  
53037/86 G11B 33/04  
32278/84 G11B 1/02

(57) Claim

1. A container for storing flat recording media, comprising  
a housing having a front opening,

at least one disc holder received in said housing, said holder being  
moveable out of said housing through said front opening by means of an  
ejector spring system,

a locking system to lock each said holder within said housing against  
the bias produced by said ejector spring system, said locking system being  
manually unlockable, each said holder comprising a support member for  
receiving and guiding a disc within said housing,

wherein said holder support member comprises a bottom portion having  
a rim to support said disc adjacent its circumference, said bottom portion  
having an inwardly tapering recess within said rim, and further comprising  
retaining means for engaging said disc when said holder is ejected  
and to release the disc upon withdrawal thereof.

# COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE

Application Number : 32279/84.  
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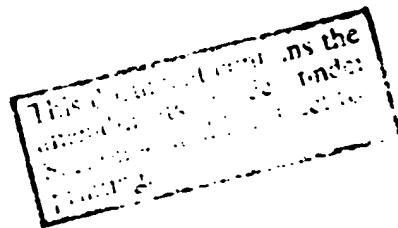
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Complete Specification for the invention entitled :

"STORAGE CONTAINER FOR DISC-FORM RECORDING MEDIA"

The following statement is a full description of this invention, including the best method of performing it known to me/us :

Abstract

The gramophone or video disc container comprises a housing from which disc holders may be ejected selectively by means of a spring arrangement, so that 5 the disc allocated to the particular holder can be removed or inserted. So that the container functions reliably both with holders that may be moved horizontally and those that may be moved vertically upwards, but so that the discs are not damaged, a driver 10 member is provided that couples the disc, during its movement stroke, to the holder, and a restraining member prevents the accelerated disc from being thrown off the suddenly braked holder.

15 Fig. 5.

Storage container for disc-form recording media

The invention relates to a storage container for disc-form recording media, especially compact discs.

A container that has the features mentioned in the preamble of patent claim 1 is described and 5 illustrated in DE-C-1 131 026. The known container is in fact a piece of furniture for storing the conventional long-playing records, which in their turn are each inserted in protective sleeves. Behind a flap door, the box-like piece of furniture has 10 plate-like holders in a horizontal position on each of which one record in its sleeve can be laid. On a strip laterally next to the holders there are arranged selection buttons, and on the actuation of a button the associated holder is conveyed out of the housing of the 15 box by a spring arrangement.

Since the publication of the said document, the recording and play-back technology for audio and video signals has undergone considerable development, wherein particular mention should be made of relatively 20 small, laser-scannable gramophone and video discs, so-called "compact discs" which, unlike the previous gramophone records, are fairly insensitive to being handled with the fingers.

There are also already play-back apparatuses for compact discs that are intended and are suitable for installation in motor vehicles, and using these the compact disc does not have to be placed manually on 5 a disc turntable, but may simply be inserted through a slot on the front face of the apparatus.

A storage container, in particular for compact discs, that is suitable for use in motor vehicles must satisfy certain conditions. The driver 10 should be able to operate it with one hand, it should permit manipulation of the disc without the driver having to change his grip, the driver's attention should not be distracted and, finally, it should be possible to manufacture the container as an inexpensive 15 mass-produced product. Since, furthermore, the installation position of the container in the motor vehicle will vary depending on the design of the vehicle, it shall be capable of functioning in each of these installation positions.

20 The size of the storage container described in the above-mentioned publication could admittedly be suitably reduced, but it would not fulfill the conditions specified above:

Its ease of operation is poor, because first of 25 all the flap door has to be opened, and only then can a record and its protective sleeve be removed. The

record then has to be removed from its sleeve and only then placed in the play-back apparatus; this manipulation has to be ruled out from the very first in a motor vehicle.

5       If the compact discs were to be placed on the holders without their sleeves, manipulation would be easier, but the discs could be damaged by the abrasive contact with the holders.

10      The usage position provided in the known container is such that the plate-shaped holders lie horizontally. The spring bias, however, in order to permit a vertical installation position as well, would have to be so rated that, in addition to the friction forces, the force of gravity also is overcome. If a 15      container of such a design is then still installed horizontally, the spring bias is too great in relation. The disc lying on the holder would remain behind in the housing whenever the holder shoots out, or is catapulted into the vehicle. Even if the "correct" spring 20      arrangement were to be provided for each installation position, it would still be troublesome for the driver to detach the disc from the smooth, flat holder.

25      Starting from a storage container having the features mentioned in the preamble of Patent Claim 1, the invention is based on the problem of producing a workable design for use in a motor vehicle, in which

the disadvantages described above are avoided.

The means provided according to the invention for solving this problem are defined in the Patent Claims and are to be viewed from different aspects.

5. Firstly, it is essential that the disc is so supported on the plate-shaped holder that it is transported reliably out of the housing but cannot be catapulted out.

This supporting arrangement shall be so  
10 designed, however, that the recording area of the disc  
is unable to come into abrasive contact with the holder,  
neither during the storage (due to the constant  
vibrations during driving), nor during removal or  
insertion. A part of the supporting arrangement may,  
15 for example, be formed by a front wall joined to the  
holder, which shall not, however, hamper the insertion  
or removal of the disc, wherein the disc is preferably  
so presented that the user is able to grasp it at  
opposite points of its wide sides, as he will also  
20 insert it in this position into the slot of the play  
back apparatus.

Embodiments of storage containers according to  
the invention are illustrated in the accompanying  
drawings and are explained in detail hereinafter with  
25 reference thereto.

Fig. 1 shows in plan view, with the housing cut open, a holder with a disc lying thereon.

Fig. 2 represents a cut-away portion of a modified embodiment of the holder as shown  
5 in Figure 1.

Fig. 3 shows in vertical section through the housing twelve different embodiments of  
10 holders, which are drawn accommodated in a common double housing merely for the sake of simplicity.

Fig. 4 is a partial vertical section according to Figure 3.

Fig. 5 shows a perspective view of a further embodiment.

15 Fig. 6 serves to explain certain dimensional requirements,

Fig. 7 shows a variation of Figure 5 in front view.

20 Fig. 8 shows a perspective view of a further embodiment,

Fig. 9 shows a perspective view of a further embodiment,

Fig. 10 is a horizontal section through one of the disc-holders in Fig. 9,

25 Fig. 11 shows in partial front view the profile of two holders arranged one above the other,

Fig.12 represents a variation of the embodiment according to Fig. 9,

Fig.13 and 14 show in each case a perspective view of further embodiments,

5 Fig.15 is a largely simplified vertical section through a further embodiment, and

Fig.16 represents a perspective view of an alternative embodiment.

10 All the embodiments illustrated relate to a container for compact discs. The ejection spring arrangement and the locking system are explained once only; they are identically applicable to the other embodiments unless otherwise stated.

15 The holder 10 is slidably accommodated by means of its edges 14 in guides on the side walls 16 of the housing. Its inner extreme position and the distance it travels on ejection are determined by stops 18 and by the locking mechanism. A leaf spring 20 is fastened

20 with one end to the rear wall of the housing, whilst its free end is biassed into the position illustrated by solid lines in Figure 1. The position of the holder 10 and of the spring 20 exerting the bias force on it are indicated by broken lines.

25 On the rear wall 22 of the housing there is furthermore integrally formed a first plastics material

spring 24 that may be deflected upwards out of the plane parallel to the principal plane of the holder 10. The free end of this spring carries a second leaf spring 26 which may be deflected transversely to it, on the free 5 end of which spring 26 a hook 28 is integrally formed. (This hook is clearly identifiable in Figure 3).

The disc-holder 10 carries a compact disc 12 which is snapped with its central hole onto a hub integrally formed with the holder. The hub projects 10 upwards from the surface of the holder 10 and is denoted by the numeral 30.

From the inner edge 32 of the holder, on which the spring 20 acts, there extend recessed guide channels, along which the hook 28 is guided by means of 15 a control crank during excursion of the springs 26 and 24 whenever the holder is pushed into the housing and is locked there, and is unlocked by renewed pressure on the front edge of the holder again for the ejection.

Let it be assumed that the holder takes up the 20 ejected position illustrated in Figure 1 and is now being pressed against the force of the spring 20 along the guides 14 into the housing. The hook 28 then strikes against a first control face 34 of the guide member and in so doing is guided along a path that is 25 indicated by dot-dash lines, the spring 26 being deformed. At the end of the control face 34, the hook

- slides through the passage 36 and, by virtue of the bias of the spring 26, is able to spring back again so that it hooks behind the locking edge 38. The holder is therewith locked. If the holder is now pushed against
- 5 the spring 20 again, the hook 28 slides along a second control face 40 and as it does so is lifted, with spring 24 additionally undergoing deflection, over a slope 42, behind which it snaps down as the spring 24 is relieved of stress. If the holder is now released, the spring
- 10 20 is able to push it out of the housing, the hook 28 sliding along the edge 44 of the guide member. After passing the end edge 46 of the guide member, the spring 26 that is being relieved of stress returns the hook to the preliminary position again.
- 15 Close to the front end, the holder has lateral cut-outs 48 into which the disc 12 partially projects, so that it may be grasped and lifted manually over the front panel 50 that is formed rigidly with the holder
- 10.
- 20 It is obvious that the hub 30 forms a supporting component that not only couples the disc to the holder during the ejection, but also prevents it from being catapulted out forwards.
- The hub 30 is shown again in Figure 2, and
- 25 beneath it a support ring 52 adjoins it coaxially. On the support ring lies the track-free inner edge of the

disc, whilst the recording tracks lie spaced from the more deeply recessed main surface 54 of the disc-receiving region. A truncated cone-shaped joining face 56 joins the region 54 to the thicker guide 5 portion 58 of the holder.

Deviating from Figure 1, the holder here has no front wall and the cut-away access portion 60 extends inwards from the outer edge 62 of the holder.

So that the housing walls on the one hand, and 10 the springs 24 and 26 with hook 28 integrally shaped with the rear wall 22 on the other hand may be removed from the mould (both are injection-moulded plastics parts), the rear wall 22 is manufactured separately and is glued or ultrasonically welded to the side walls 16, 15 which in turn are injection-moulded together with a top wall 64 (Figure 3) and a bottom wall 66.

The different embodiments of the holders, which are illustrated in Figure 3, will now be explained in succession, in each case with regard to their 20 characteristic features.

The uppermost holder 68 is provided with a hub 70 that may be snapped into the hole in the disc, the slots 72 of which hub enable the individual hub sectors to move resiliently inwards, whilst outer edge parts 74 25 engage projection-like over the disc hole. The disc 76 is indicated schematically.

The second holder 78 has the disc 80 lying simply in a recessed depression. On its underside the holder 78 has grooves 82 into which projections 86 engage from below, that is to say, from the next holder 5 84. The grooves 82 may be longer than the distance travelled by the holder. For the holder 84 the projections 86 assume the driver function and, as they cooperate with the grooves 82 like two combs, the disc cannot slip through between two holders lying one above 10 the other. The front wall 88 of the holder 84, which wall carries a release button 90, assumes the restraining function. It is preferable for the button 90 to project beyond the front wall by a greater distance 92 (compare Figure 6) than the release travel 15 path 94 for the locking system, so that several holders cannot inadvertently be released simultaneously, but only the one of which the button has been pressed by a user.

The holders 68, 78 and 84 so far described all 20 have access openings for lifting a disc over the rigid front wall, these openings being denoted in Figure 1 by 48 and in Figure 2 by 60.

The manipulation in this operation is rather delicate, however. Less skill would be required if the 25 disc could simply be pulled out forwards, that is to say, if the front wall were not in the way or,

alternatively, if the disc were automatically to be raised high enough for it to be pulled out easily despite a rigid front wall.

Constructive solutions to these problems are 5 provided in the next and additional holders.

The holder 96 has a front wall 98 which is hinged by means of lateral cheeks 100 and 102 to the holder. It should be mentioned at this point that, despite this, the front wall 98 is still able to 10 exercise its function as a restraining member if it is not raised until the holder has been ejected. Control devices required for this are not illustrated; they form part of the specialist knowledge of the designer.

The next holder 104 corresponds to the embodiment 15 shown in Figure 2. Here, however, the construction of the locking system is shown again in side view, and the slope 42 in particular is readily identifiable.

The next holder 106 has a front wall 108 with cheeks 110 which, when the holder is ejected, are 20 able to slip downwards, for example under the effect of gravity, along straight guides 112 which are provided laterally with respect to the disc-receiving region on the holder. In this manner the escape space in front of the disc is left clear and 25 the disc can be removed forwards. Upon reinsertion, pressure is exerted on the front wall 108 and, when the

wedge slope 114 of the cheeks runs onto the front edge of the housing, the cheeks, together with the front wall, are lifted up again.

It is obvious that the locking system is of 5 identical construction to that of Figure 1 for all the holders already described and for those still to be described #and this applies also to the holders still to be explained#. \* It should also be noted that the two housings located one above the other and joined in 10 positive engagement in Figure 3 could also be of one-piece construction.

• : : : : The next lowest holder, the uppermost one in the lower housing, corresponds to the embodiment of Figure 2 and has grooves 82, as in the case of the holder 78, 15 into which complementary projections engage from the holder located beneath.

• : : : : The next holder 116 has a rigid front wall 118 integrally moulded therewith, on which wall is articulated about pegs 120 parallel to it a lifting 20 element in the form of an angle arm 122, the free arm of which is biassed by an auxiliary spring 124 into the lifting position shown in Figure 3. The lifting arm engages beneath the disc 126 and lifts its outer edge

above the front wall. Upon insertion, the angle arm 122 is pushed downwards because the track-free upper side of the disc 126, together with the front edge of the housing, or the holder lying thereover, forms a 5 wedge guide means.

The next holder 128 is shown in profile. In addition to the disc-holding arrangement, comprising hub 30 and ring 52 shown in Figure 2, the disc is also supported at its track-free outer edge by a rim 130.

10 The next holder 132 has extending backwards from its front wall side panels 134 in which are worked slots 136 which extend obliquely upwards and backwards. In these slots 136 engage pegs 138 of a lifting bracket 140, at the end of which remote from the pegs 138 are 15 provided control pins 142 which engage in guide slots of the side walls of the housing. In each extreme position of the holder, these pins 142 strike against one end of these slots and the slot length is somewhat shorter than the distance travelled by the holder, so 20 that the holder 140 oscillates between a lifting position, which is illustrated in Figure 3 and in which it lifts the disc 144 above the front wall 146 of the housing, and a lowered position, into which it is brought at the latest as it runs onto the inner end of 25 the housing support.

The next holder 150 corresponds to Figure 2

as regards the function of the driver member and of the restraining member. The front wall, however, has no interruption, as produced in Figure 2 by the cut-out 60, but extends across the entire width of the housing and 5 thus closes this completely when a holder has been inserted. The holder 150 is provided with an opening 154 for the removal the disc 152. When the holder has been ejected, the user is able to insert a finger through the opening from below, lift the disc away from 10 the hub 30 and pull it out forwards, as the outer edge of the disc then lies above the front wall.

Finally, it is also possible to provide a telescopic withdrawal means for the holder. This is indicated with reference to the last holder 160.

15           Rails 164 (the profile of which is hatched), which may be withdrawn by about half the depth of the housing by means of tension springs 162, are guided so as to slide along the side walls of the housing, in that a rib 166 integrally formed on the inside of the 20 side wall of the housing engages in the one slot of the rail profile, whilst a counter-rib 168 moulded on the holder 160 engages in the opposing slot. The holder 160 too is displaceable relative to the rails 164 by means of the tension springs 162 by about half the depth 25 of the housing. The total travel path of the holder 160 is thus sufficiently large for the disc to be lifted

freely upwards away from its supporting components 170, which is rendered possible by the holder having lateral indents 172, for instance on both sides of the centre of the disc, the shape of which is similar to the indents 5 48 in Figure 1, but much less deep.

Figure 4 shows that the projections 174 of the holder that is uppermost in each case in the housing engage in slots 176 allocated to them in the top wall 178 of the housing. The holder illustrated here right 10 at the top is guided with lateral grooves\* 14 directly in housing grooves 180. The holder 182 illustrated beneath has on its upper side and underside a concave or dished profile 184. Regardless of how inexpertly a disc is inserted into the gap between two such holders 15 having a dished profile, the disc can come into contact with any surface region of two such holders always only with its non-sensitive outer edge. In this manner the

\*Presumably "Rippen" (ribs), and not "Rillen" (grooves)  
20 is intended here - translator.

discs are absolutely protected against scratching.

The disc-holder 186, likewise provided with a dished profile, illustrated beneath here has guide grooves 188 that are pushed onto guide ribs 190 integrally formed with the side walls 16 of the housing.

It is obvious, of course, that one and the same housing is always equipped only with similar holders, with the exception of the release buttons 90, details of which will be given in the following explanation of Figures 5 and 7.

The illustration is largely schematic, and the height dimensions of the holders in particular have been exaggerated in order that the details may be perceived at all in the drawings. In reality, the individual holders are spaced from one another only by distances of the order of 5 mm or even less. If the release button 90 of all slider members accommodated in a housing were to be arranged at the same place on its front wall, it would hardly be possible to release an individual holder by finger pressure alone.

It is therefore preferred, as indicated in Figures 5 and 7, for the buttons 90 of successive holders to be laterally staggered, and for the buttons to be designed with a width approximately corresponding to the size of a finger tip. This is illustrated in

Figure 5.

Alternatively, very narrow buttons, as in Figure 7, may be provided, which are not staggered across the entire width of the housing, so that to the right of the buttons in Figure 7 equal-size inscription spaces 192, which are optionally protected by a see-through cover 194, are left free.

Only in Figure 5 are undercut ridges 200 on the top wall 64 of the housing illustrated; to these are allocated complementary grooves in the bottom wall 66 of the housing. Using these ridges and grooves, identical housings can be joined together in positive engagement and stacked to form larger filing arrangements.

Fig. 8 shows an embodiment in which the disc-form holder has a front wall formed rigidly therewith. The front wall 210 is cut away at 212 and the cutout is extended into the flat part of the holder 214 at 216. An inset 218 of L-shaped profile is hinged at the inner end of the latter, the inset fitting complementary into the cutouts. The hinged arm carries on its side facing away from the holder a hook 220 which, when the inset is folded up and the holder is inserted into the housing 224, anchors itself in a corresponding recess in the floor 226 of the housing. The holder is thus locked against the bias of the spring

arrangement (not shown). By lifting the other arm 228 designed as a button, the holder may be unlocked. As shown, the disc 230 rests with its outer edge on a recessed rim 232. In the position of the holder shown 5 in Fig. 8, the user is able to pass his fingers through the open region of front wall and holder and grasp the disc on its upper and underside, lift it and pull it away over the front wall. The process is reversed when the disc is inserted.

10 This construction is especially practical for motor vehicles because the individual holders need travel only a minimum ejection path.

15 The disc container according to Fig. 9 includes a housing 310 in which a number of holders 312 (in this case five) each arranged to take one disc, are slidably accommodated in parallel one above the other. In the interior of the container each holder is assigned a spring arrangement which biases the holder into a removal position; in Fig. 9 the third holder is shown 20 in this ejected removal position. The extent of travel on ejection is determined by stops. In the inserted position the holders are locked in the housing against the bias of the spring arrangement, and this locking mechanism can be released manually. In the 25 embodiment according to Fig. 9, a locking system is provided in which the holder is locked when it is

inserted from the removal position and the locking mechanism is unlocked again by renewed pressure on the inserted holder; constructions suitable for this purpose are disclosed in Figs 1 and 3, to which 5 reference is made. In order to render the unlocking of the rather narrow holders more convenient for the user, a protruding button 314 is integrally formed with the holder on the right- or left-hand side, its position alternating with successive holders.

- 10        Each holder includes a plate 316 on which the disc 318 can be placed, and on the holder there is hinged a flap 320 which is held away from the plate 316 by means of a leaf spring 322 when the holder is in the removal position. When the holder is inserted, the 15 flap runs up against the front edge of the holder located above or, in the case of the uppermost holder, the front edge of the housing 310 and as a result is pressed downwards so that the slot defined by the plate 316 on the one side and the flap 320 on the other side 20 is closed. The free edge of the flap 320 is angled downwards and the ledge 322 thus formed closes the disc-receiving compartment when the holder is in the inserted position. The disc is therefore enclosed on all sides by the holder in the manner of a pocket.
- 25        Fig. 10 shows the internal construction of a holder, the top wall of the plate 316 being removed.

On the inner side of the vertical walls 324 there are two leaf springs 326 which are positioned and biased in such a manner that when the disc 318 is inserted they are first deflected but can then spring back again and 5 in so doing exert an inwardly directed force on the disc which assists the insertion process. When, on being unlocked, the holder is ejected, the springs 326 prevent the disc being catapulted out. It should be noted that this principle can also be applied in the embodiments 10 described below, but is not shown again in the drawings.

The profile of the individual holders shown in Fig. 11 can also be used in all embodiments. The base and top walls of the plate receiving the disc are concavely curved so that, even during insertion and 15 removal, the disc can come into contact with the holder only with its edges and never with its recording region.

In the variant according to Fig. 12, there are hinged on the top wall and on the base wall of the plate 328 forming the holder flaps 330 and 332, respectively, 20 each of which is held open by bias springs 334 when the holder is in the removal position. The closure ledge 336 is here formed by an extension of the unlocking button 338.

In the embodiment according to Fig. 13 U-shaped 25 elements 342 are slidably guided in the housing 340, which elements are biased towards the removal position

by means of a spring arrangement and are retained in the housing by means of a manually releasable locking mechanism. Each U-shaped element carries a frame 344 having a bridge 346 at the front, the bridge opening 5 resiliently into an oval shape in the removal position, as shown for the third holder. The closure bar 348 is pivoted on the U-shaped element 342 by means of side pieces 350 and can be swung downwards, as shown, so that the disc 318 can be removed and inserted in alignment 10 with the spread-open bridge 346. The entire frame can consist of resilient plastics or, alternatively, the bridge 346 and lateral strips 342 attached thereto can be of sheet metal and a pocket 354 of plastics film can be clamped into the bridge, as shown.

15        In the variant according to Fig. 14, the frame 356 consists of resilient plastics and is biased not towards the open position of the disc insertion slot, as in Fig. 13, but towards the closed position. Whereas, therefore, in Fig. 13 the bridge is closed by 20 means of the closure bar 348 by inserting the holder, in Fig. 14 the slot is spread open by lateral pressure on the frame 356. For this purpose the pivoted side pieces 358 of the closure bar 360 have wedge-shaped thickened portions 362 which narrow the space between 25 the side pieces when the cross-bar 360 is swung downwards. Since a considerable counterforce acts

towards the outside, only one common U-shaped element 364 having a cross-bar 360 is provided for all the holders; a selector system (not shown) ensures that always only one of the, for example, five holders is 5 ejected from the housing 366.

The embodiment according to Fig. 15 corresponds in principle to that of Fig. 12, except that the depth of the holder plus the depth of the flaps 370 is less than the diameter of the disc. The forward segment of 10 the disc 318 therefore remains free and the user pushes in the holder 372 by pressing on the free edge of the disc with his fingers. As a result of the springs 326, the disc cannot fall out despite the absence of closure bars.

15 In the embodiment according to Fig. 16, the principle by which the disc insertion slot is opened and closed corresponds to that of Fig. 14. The slot 380 is not located at the front of the housing 382 but extends perpendicular thereto, so that the container is 20 especially suitable for storing the discs upright, as shown. The drawing shows the ejection spring 384 and a catch which is formed integrally with the holder 386 and can be unlocked manually by means of button 388.

The claims defining the invention are as follows:

1. A container for storing flat recording media, comprising a housing having a front opening,

at least one disc holder received in said housing, said holder being moveable out of said housing through said front opening by means of an ejector spring system,

a locking system to lock each said holder within said housing against the bias produced by said ejector spring system, said locking system being manually unlockable, each said holder comprising a support member for receiving and guiding a disc within said housing,

wherein said holder support member comprises a bottom portion having a rim to support said disc adjacent its circumference, said bottom portion having an inwardly tapering recess within said rim, and further comprising

retaining means for engaging said disc when said holder is ejected and to release the disc upon withdrawal thereof.

2. A container for storing flat recording disc media, comprising a housing having a front opening,

at least one disc holder received in said housing and moveable out of said housing through said front opening by means of an ejector spring system,

a locking system to lock each said holder within said housing against the bias produced by said ejector spring system, said locking system being manually unlockable.

wherein each said holder comprises a support member for receiving and guiding a disc within said housing,

further comprising positioning means for positioning said disc relative to said disc holder upon the disc being placed upon said support member, said positioning means comprising at least one spring-biased retaining member engaging said disc circumferentially and braking said disc in the ejected position of said holder.



3. The container of claim 1 or claim 2 wherein each said holder includes a front member adapted to close said housing front opening when said holder is locked in the housing.
4. The container of claim 1 or claim 2 wherein a plurality of holders is provided in a common housing and a common front wall member covers said housing front opening when all said holders are locked in said common housing.
5. The container of one of claims 1, 2, or 3 wherein each front member is pivotably connected to its holder.
6. The container of claim 4 including a pivotable front wall member.
7. The container of claim 1 or claim 2 wherein each holder includes two guiding members forming a funnel-shaped opening.
7. The container of one of the preceding claims wherein each holder has upstanding prongs adjacent its inner end, said prongs engaging into slots provided on the prong-facing side of another holder or of a housing top wall.
8. The container of one of the preceding claims wherein said housing has a rear wall, each holder has a rear edge, and each ejection spring being mounted between said housing rear wall and holder rear edge.
9. The container of claim 3 wherein each front member extends to a bottom edge of a superposed holder or housing wall.
10. The container of claim 1 or claim 2 wherein each holder has a front member integrally formed with said support member.
11. The container of claim 10 wherein said holder has recesses permitting access to a disc placed on the holder.
12. The container of claim 11 wherein each holder has lateral recesses rearwardly displaced with respect to a front member.



13. The container of claim 11 wherein a holder recess intersects a front member.

14. The container of claim 10 wherein each holder support has an aperture permitting access to a disc placed on said holder.

15. The container of claim 5 wherein said front member is pivotable into a displaced position permitting withdrawal of a disc placed on the respective holder in a direction parallel to the disc itself.

16. The container of claim 1 wherein each holder support is depressed on its upper and under side.

17. The container of one of the preceding claims wherein each holder support is bilaterally slidable guided in guide means provided on lateral housing walls.

18. The container of claim 17 wherein said guide means include telescoping rails.

19. The container of one of the preceding claims wherein ~~said~~ locking system locks automatically upon pushing of a holder into the housing, and unlocks upon a second pushing stroke on the holder. *sf*

20. The container of one of claims 1 to 18 wherein each holder has an unlocking key protruding beyond said housing front.

21. The container of claim 20 wherein said key extends over a portion only of the holder front width, and keys of superposed holders being positioned alternately near a right and left end of said holder fronts.

22. The container of claim 20 wherein said key protrudes beyond ~~said~~ front by a distance exceeding a predetermined unlocking stroke. *sf*

23. The container of claim 3 wherein each front member includes a label field.

24. The container of claim 23 including a transparent pane covering said label field.
25. The container of claim 1 or claim 2 wherein each holder has an access slot which is open when the holder is out of the housing and closed when the holder is locked in the housing.
26. The container of claim 10 wherein the front member has a recess closed by a displaceable insert which forms an unlocking key.
27. The container of claim 3 including a plurality of holders in a common housing, and the front members of all holders cooperating to cover said housing front opening.
28. The container of claim 20 wherein each key is operatively connected to a latch member so as to lift the latter clear of a housing recess.
29. The container of claim 28 wherein said housing recess is provided in a lateral housing wall extending substantially perpendicular with respect to a plane defined by a disc to be stored in the container.
30. The container of claim 28 wherein each key is integrally formed with the holder.
31. The container of claim 30 wherein each key is integrally formed with said latch.
32. The container of claim 1 or claim 2 wherein said support members are substantially plate-shaped spanning the interior width of said housing.
33. The container of claim 32 wherein said supports include guiding means beyond said depression.
34. The container of claim 33 wherein said guiding means include lateral grooves cooperating with mating rails disposed on the inner face of lateral housing walls.

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35. The container of claim 5 including spring means for biasing said front member into a position pivoted away from said support member.
36. The container of claim 35 including a hinge between said support member and front member, and said spring means being mounted adjacent said hinge.
37. The container of claim 1 or claim 2 including at least one spring arm engaging the outer circumference of a disc placed on a holder.
38. The container of claim 37 including a pair of symmetrically disposed spring arms.
39. The container of claim 38 wherein said spring arms are mounted such that they are deflected upon withdrawal of said disc when said holder assumes its ejected position.
40. A container as hereinbefore described with respect to and as shown in the accompanying drawings.

DATED this THIRTY-FIRST day of MAY 1988  
idn inventions and development  
of novelties ag

Patent Attorneys for the Applicant  
SPRUSON & FERGUSON



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Fig. 2

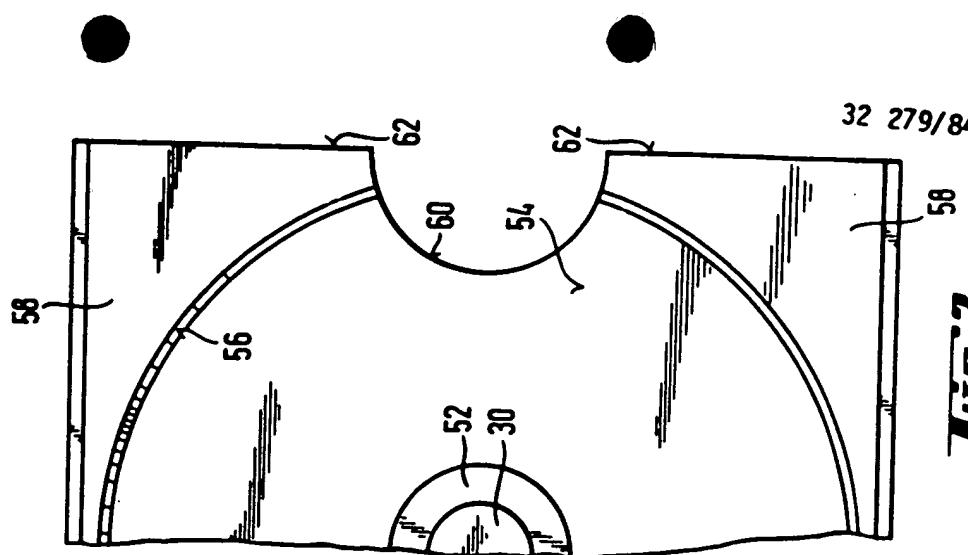
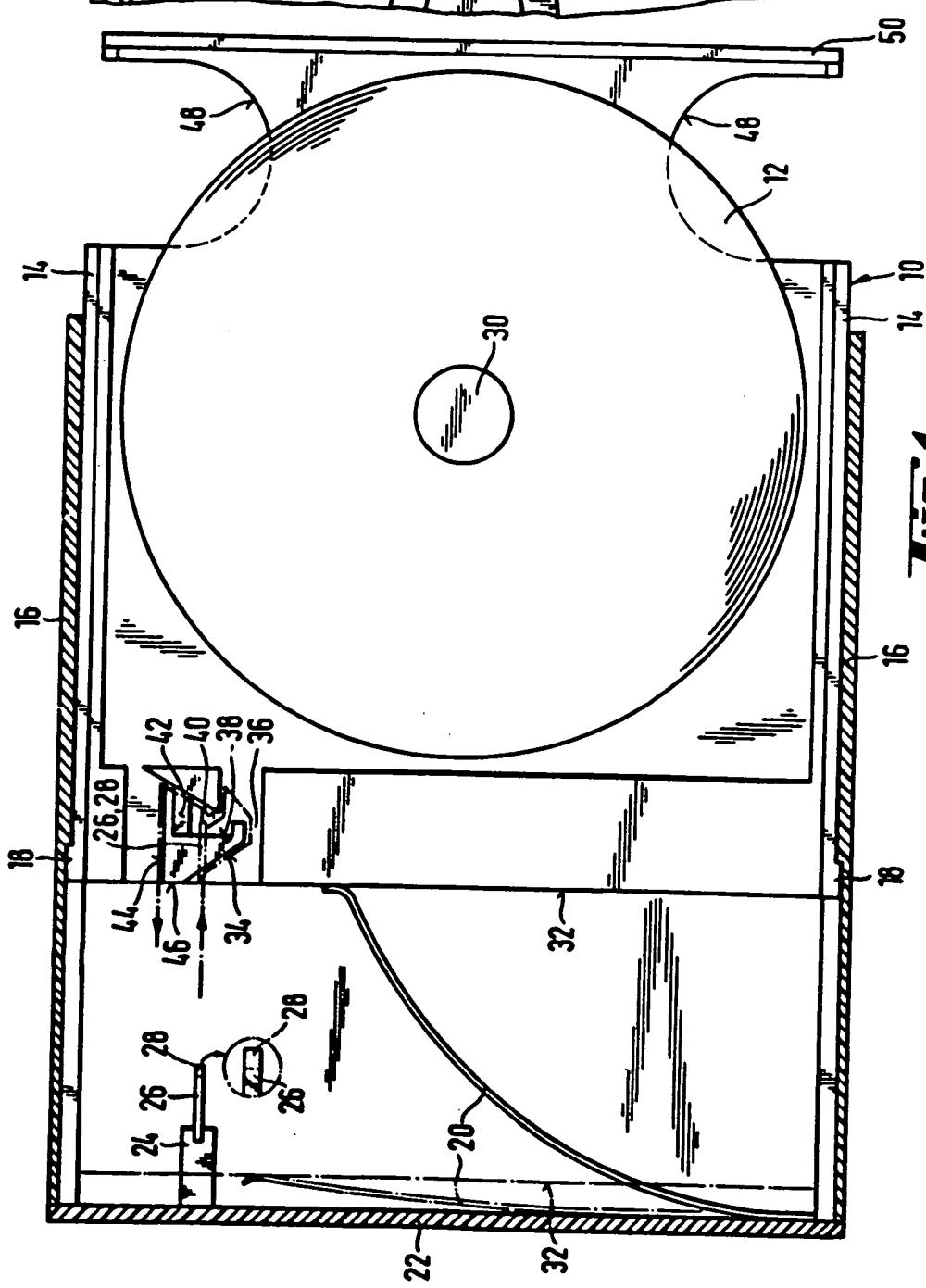
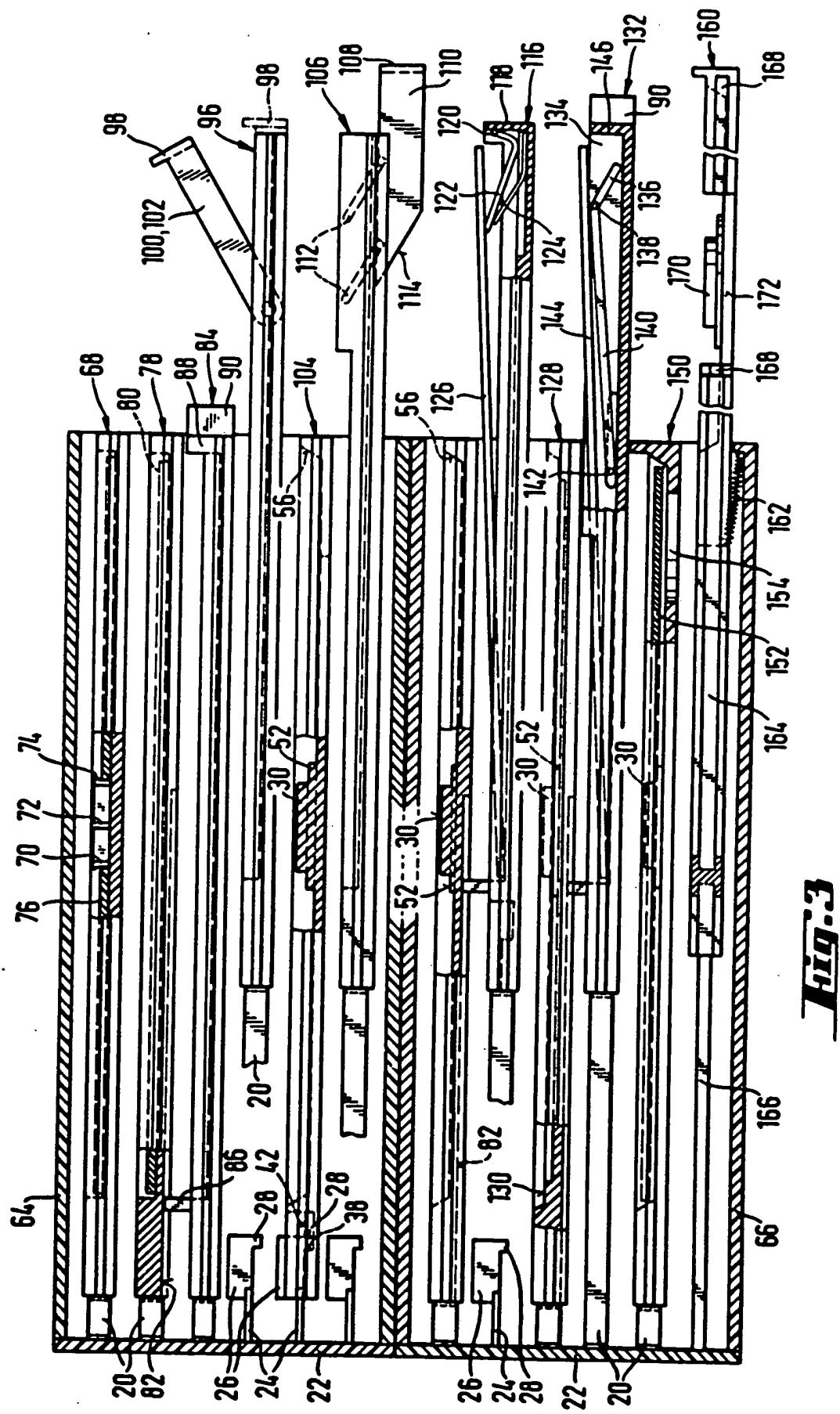
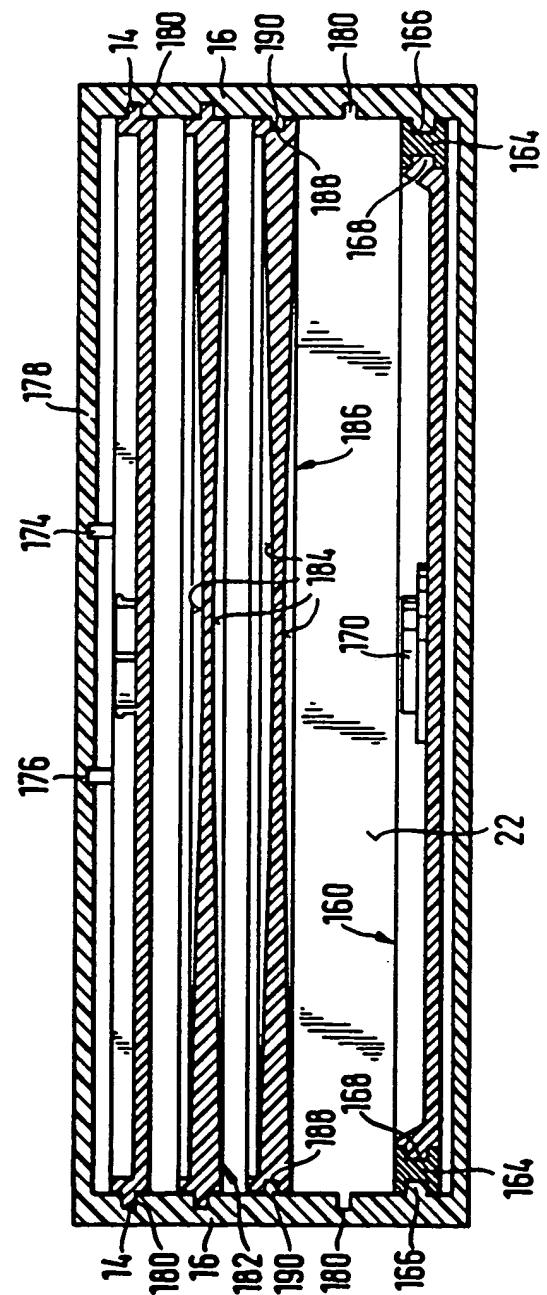


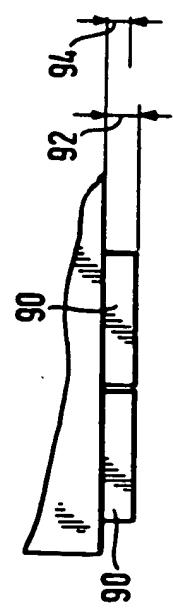
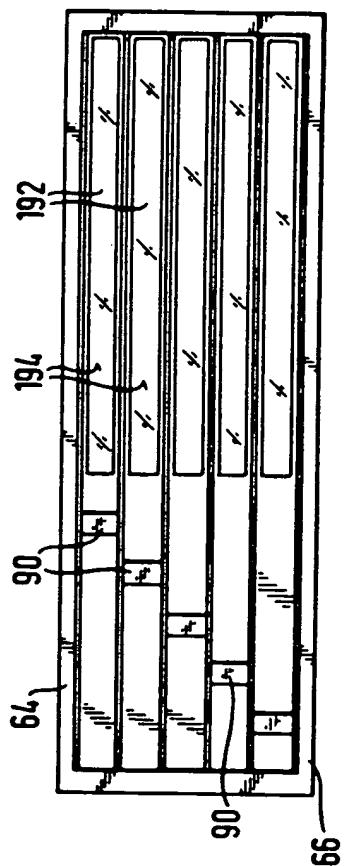
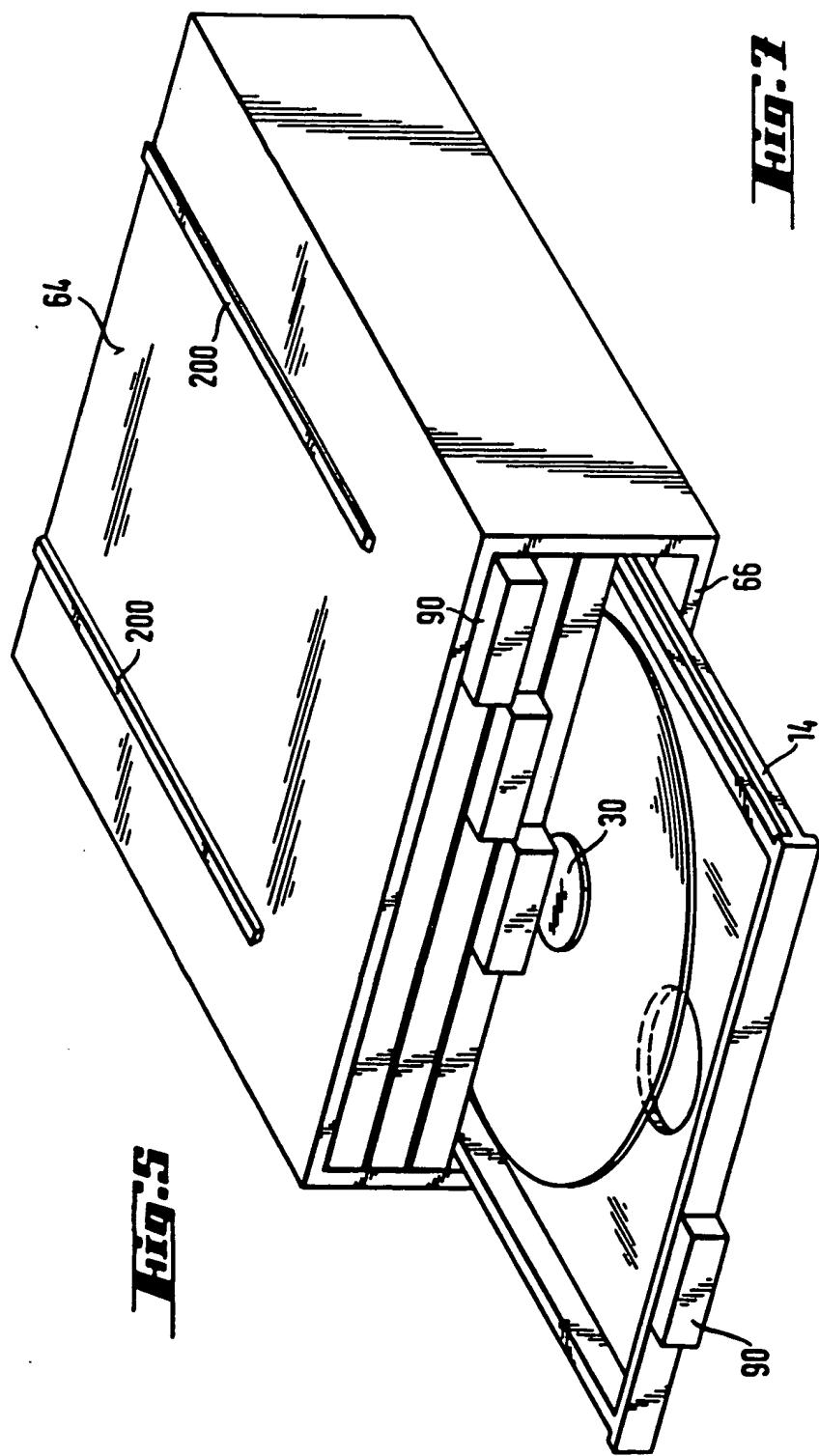
Fig. 1

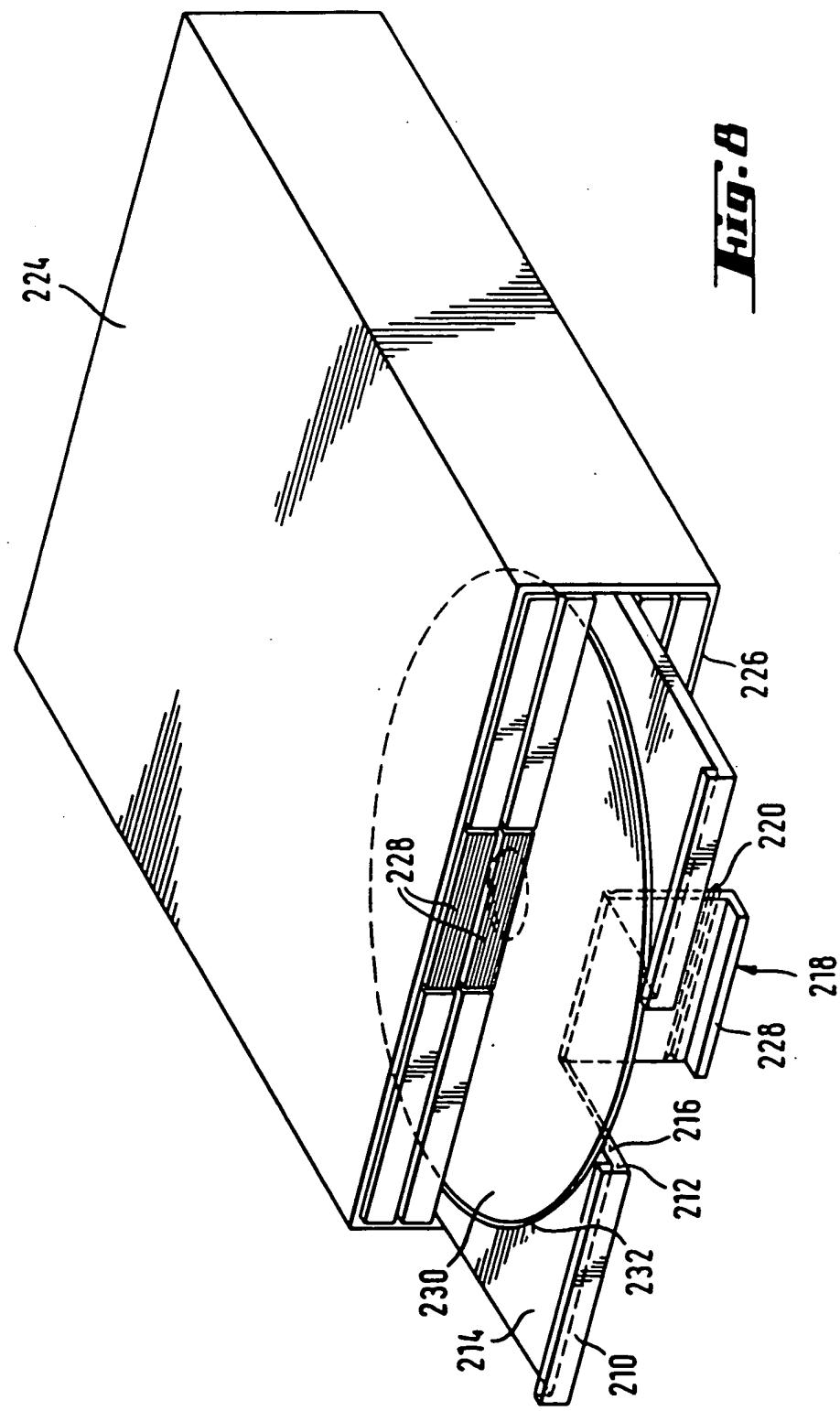






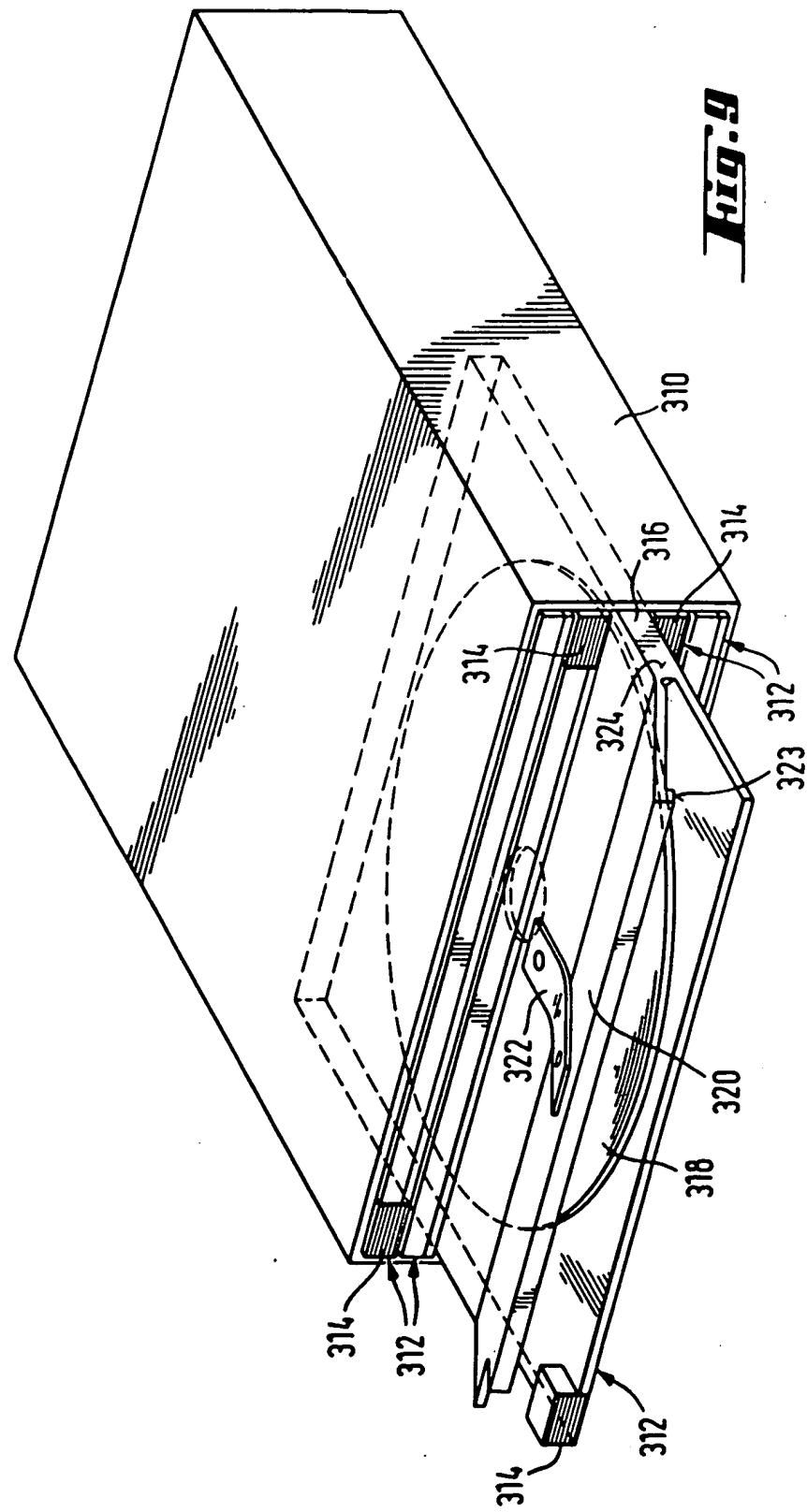
THU. 4.



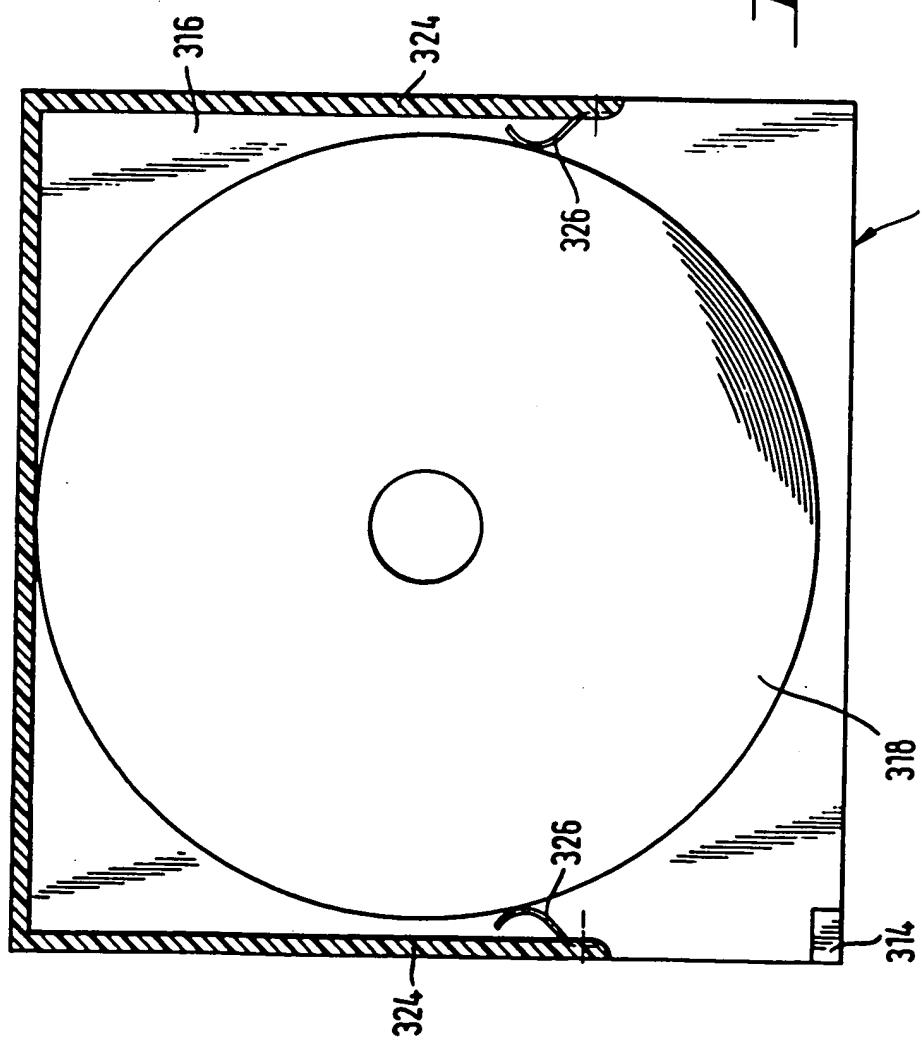


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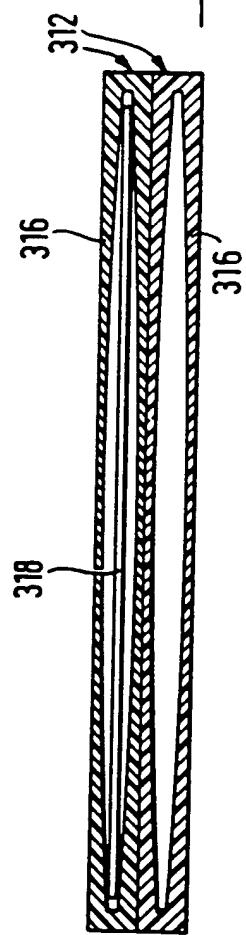
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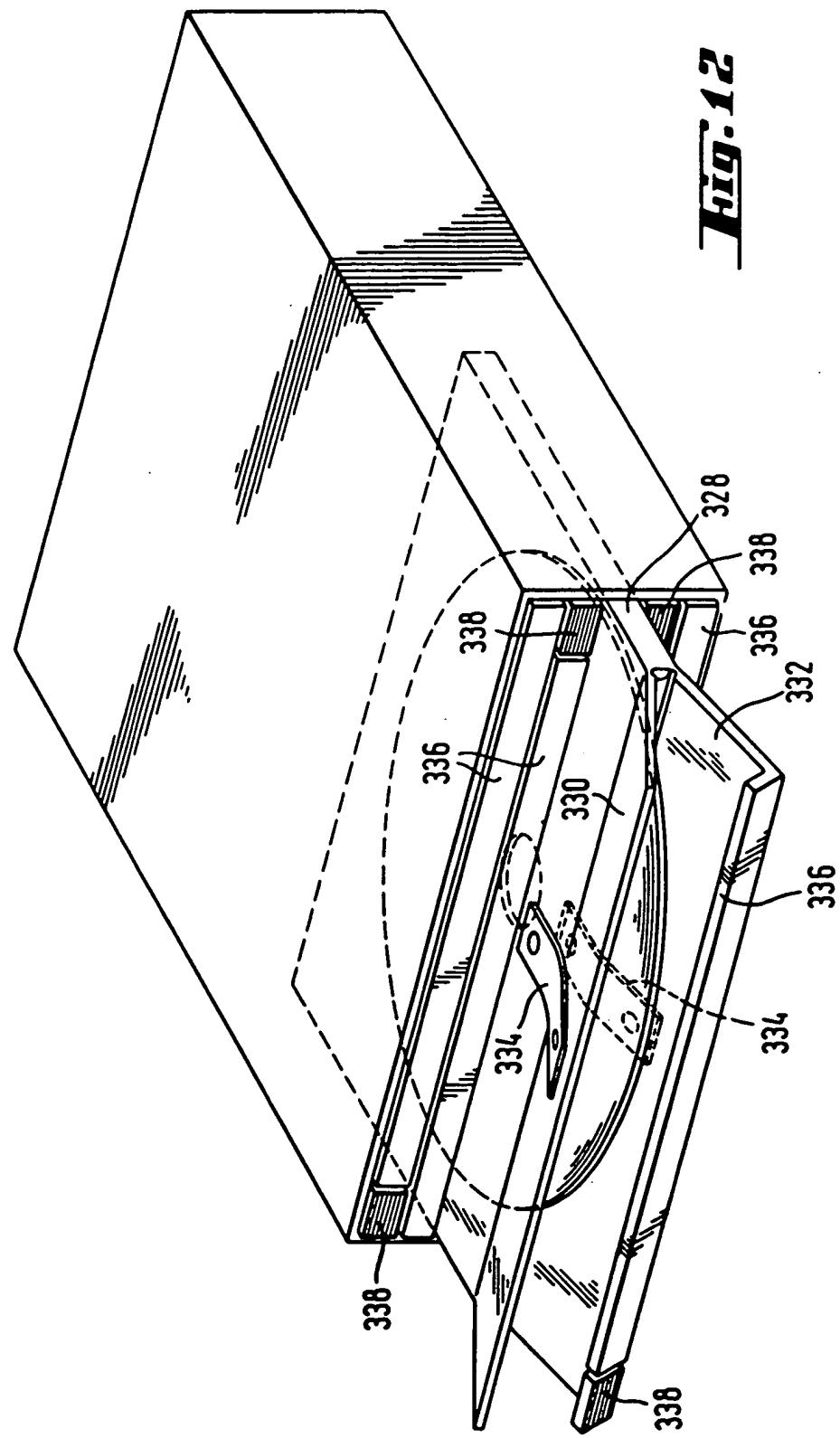
*Fig. 10*



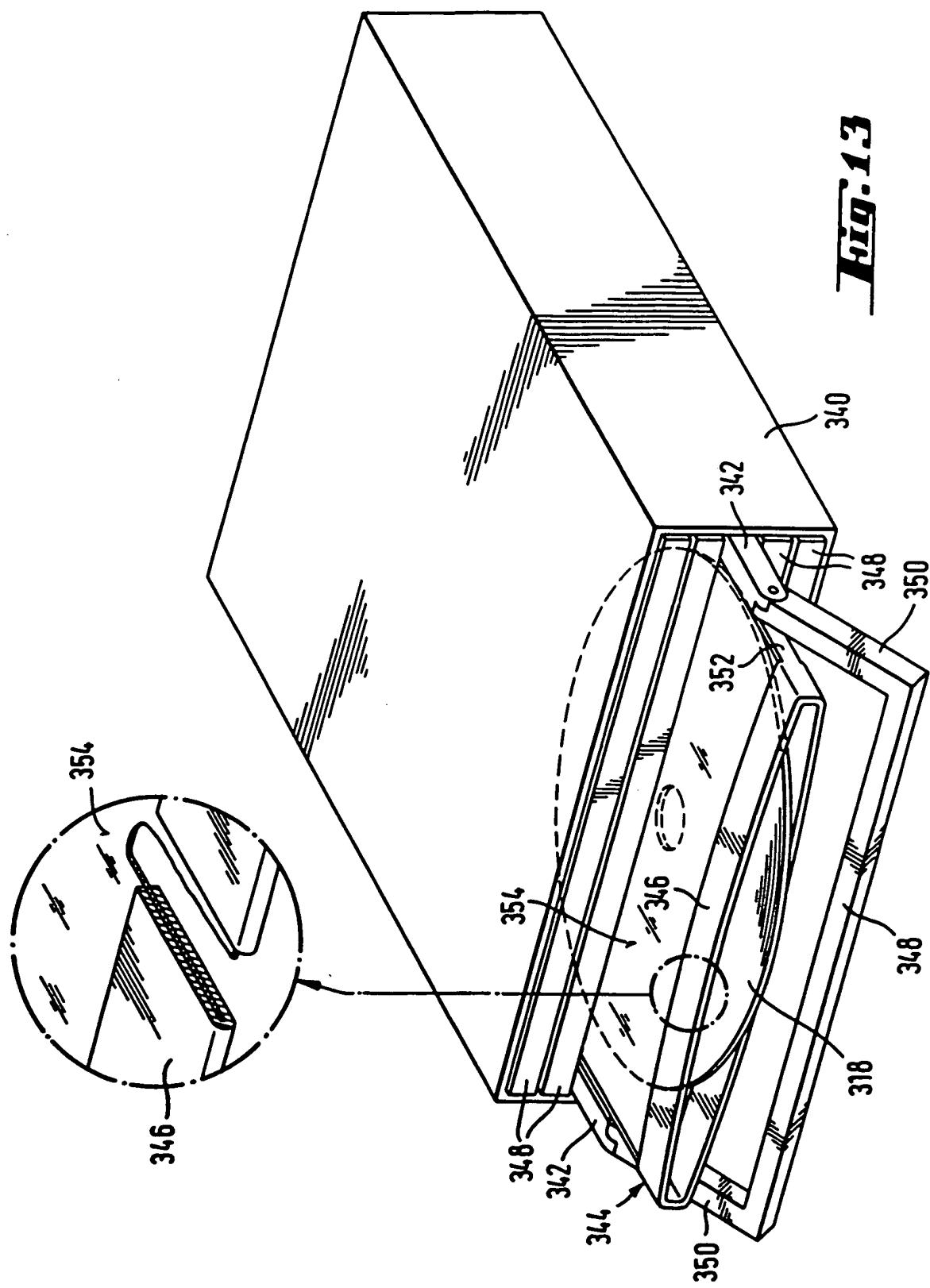
*Fig. 11*



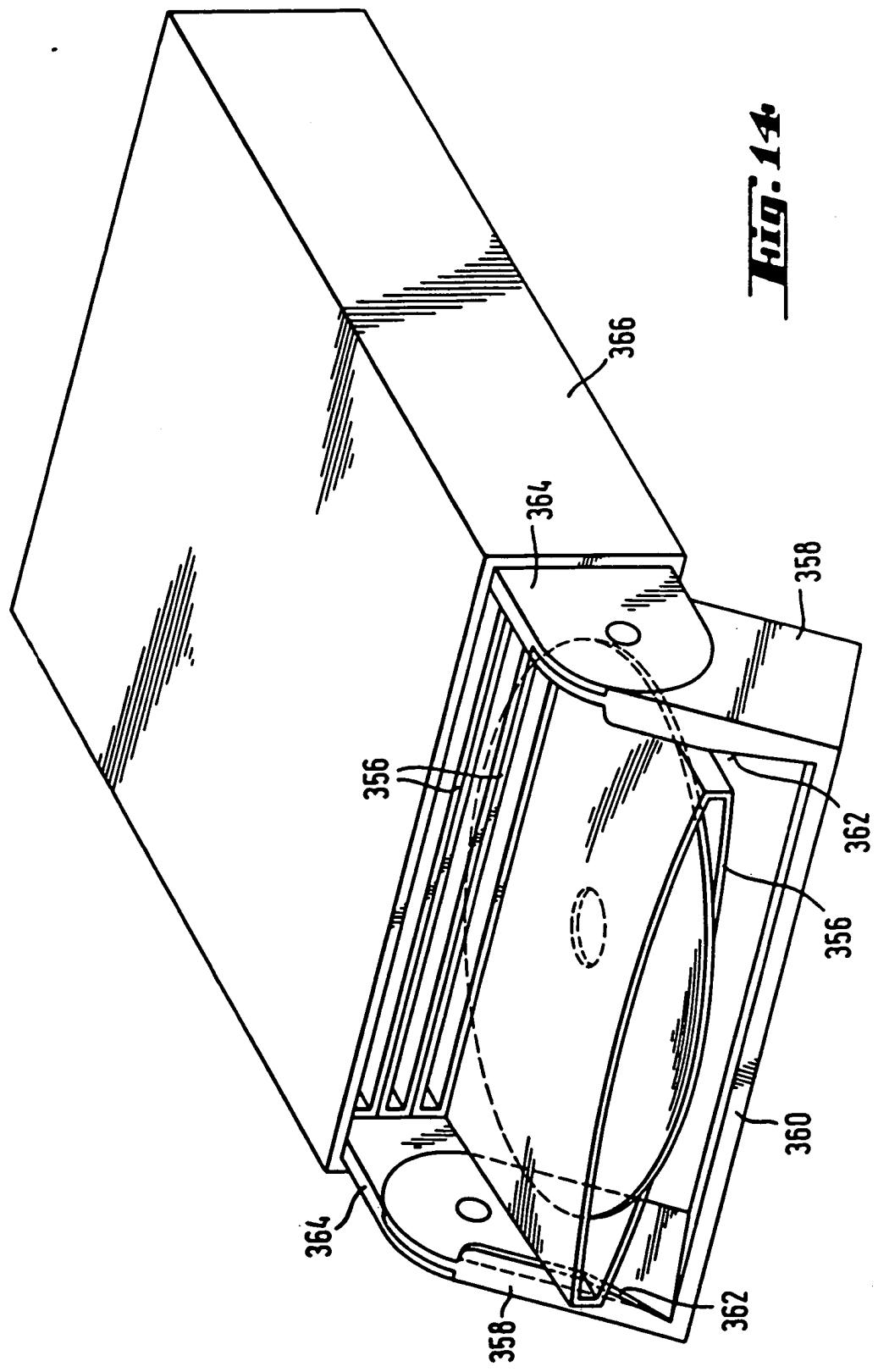
**Fig. 12**

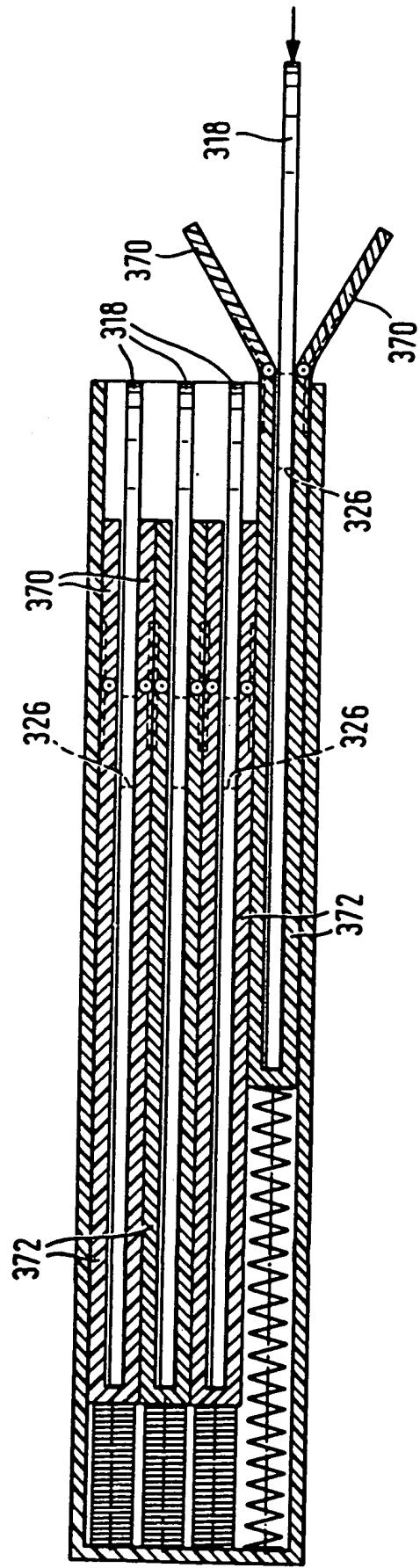


**Fig. 13**



22 23 24 25 26 27 28





**Fig. 15**

***Fig. 16***

